VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JnanaSangama", Belgaum -590014, Karnataka.

LAB REPORT
on

Object Oriented Programming In Java(3CS3PCOOJ)

Submitted by

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In partial fulfillment of the award of degree of
BACHELOR OF ENGINEERING
in
COMPUTER SCIENCE AND ENGINEERING

B.M.S.COLLEGE OF ENGINEERING
(Autonomous Institution under VTU)
BENGALURU-560019
December-2023 to March-2024

WEEK 1

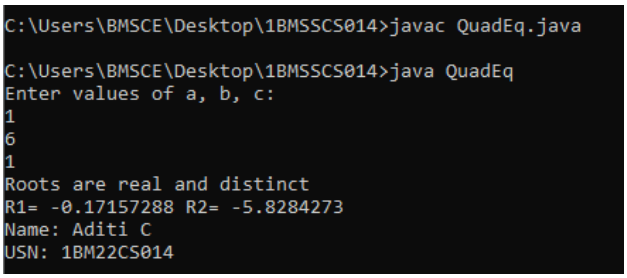
Program 1: Develop a Java program that prints all real solutions to the quadratic equation ax2+bx+c= 0. Read in a, b, c and use the quadratic formula. If the discriminant b2-4ac is negative, display a message stating that there are no real solutions.

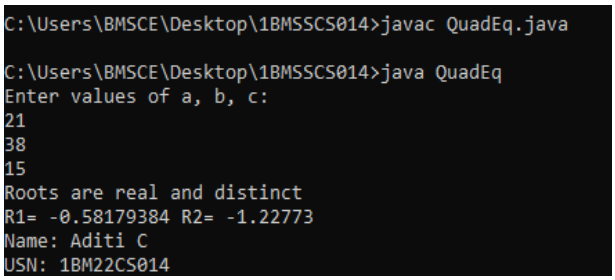
Code:

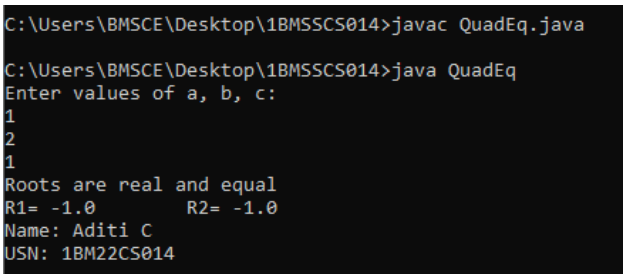
```
import java.util.*;
public class QuadEq
{
   public static void main(String args[])
   {
      float a, b, c, d=0.0f, r1=0.0f, r2=0.0f;
      System.out.println("Enter values of a, b, c: ");
      Scanner read= new Scanner(System.in);
      a=read.nextFloat();
      b=read.nextFloat();
      c=read.nextFloat();
      if(a==0||b==0||c==0)
      {
         System.out.println("Invalid Input");
      }
      else
      {
         d=b*b-4*a*c;
         if(d>0)
         {
            r1=(float)(-b+Math.sqrt(d))/(2*a);
            r2=(float)(-b-Math.sqrt(d))/(2*a);
            System.out.println("Roots are real and distinct\nR1= "+r1+"\tR2= "+r2);
         }
         else if(d<0)
         {
            System.out.println("Roots are imaginary");
         }
         else
         {
            r1=-b/(2*a);
            r2=r1;
```

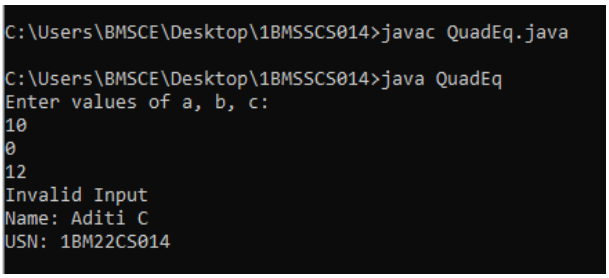
```
            System.out.println("Roots are real and equal\nR1= "+r1+"\tR2= "+r2);
        }
    }
    System.out.println("Name: Aditi C\nUSN: 1BM22CS014");
  }
}
```

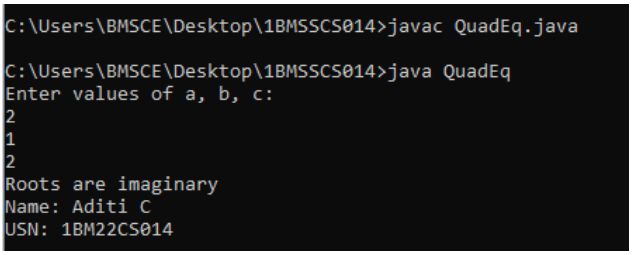
Output:











WEEK 2

Program 2: Develop a Java program to create a class Student with members usn, name, an array credits and an array marks. Include methods to accept and display details and a method to calculate SGPA of a student.

Code:

```
import java.util.*;
public class Student {
   String name, usn;
   int credits[], marks[];
   public void display(double res) {
      System.out.println("Name : " + name);
      System.out.println("USN : " + usn);
      for (int i = 0; i < credits.length; i++) {
         System.out.println("Subject " + (i + 1) + " :\t Marks= " + marks[i] + "\tCredits= " +
credits[i]);
      }
      System.out.println("\nSGPA : " + res);
   }
   public double sgpa() {
      double tc = 0;
      double tgp = 0;
      for (int i = 0; i < credits.length; i++) {
         tc += credits[i];
         tgp += calgp(marks[i]) * credits[i];
      }
      return (tgp / tc);
   }
   public double calgp(int m) {
      if (m >= 90) {
         return 10;
      } else if (m >= 80) {
         return 9;
      } else if (m >= 70) {
         return 8;
      } else if (m >= 60) {
         return 7;
      } else if (m >= 50) {
         return 6;
      } else {
```

```
            return 0;
        }
    }
    public static void main(String args[]) {
        Scanner read = new Scanner(System.in);
        Student ob = new Student();
        System.out.print("\nEnter name: ");
        ob.name = read.nextLine();
        System.out.print("\nEnter USN: ");
        ob.usn = read.next();
        System.out.print("\nEnter no. of subjects: ");
        int n = read.nextInt();
        ob.credits = new int[n];
        ob.marks = new int[n];
        System.out.println("Enter marks and credits:");
        for (int i = 0; i < n; i++) {
            System.out.println("Marks for subject " + (i + 1) + ": ");
            ob.marks[i] = read.nextInt();
            System.out.println("Credits for subject " + (i + 1) + ": ");
            ob.credits[i] = read.nextInt();
        }
        double res = ob.sgpa();
        ob.display(res);
        System.out.println("Name: Aditi C\nUSN: 1BM22CS014");
    }
}
```

Output:

```
C:\Users\BMSCE\Desktop\014>javac Student.java

C:\Users\BMSCE\Desktop\014>java Student

Enter name: ABC

Enter USN: 123

Enter no. of subjects: 5
Enter marks and credits:
Enter marks for subject 1: 90
Enter credits for subject 1: 4
Enter marks for subject 2: 86
Enter credits for subject 2: 3
Enter marks for subject 3: 95
Enter credits for subject 3: 4
Enter marks for subject 4: 89
Enter credits for subject 4: 1
Enter marks for subject 5: 98
Enter credits for subject 5: 1
Name : ABC
USN : 123
Subject 1 :      Marks= 90      Credits= 4
Subject 2 :      Marks= 86      Credits= 3
Subject 3 :      Marks= 95      Credits= 4
Subject 4 :      Marks= 89      Credits= 1
Subject 5 :      Marks= 98      Credits= 1

SGPA : 9.692307692307692
Name: Aditi C
USN: 1BM22CS014
```

WEEK 3

Program 3: Create a class Book which contains four members: name, author, price, num_pages. Include a constructor to set the values for the members. Include methods to set and get the details of the objects. Include a toString( ) method that could display the complete details of the book. Develop a Java program to create n book objects.

Code:

```
import java.util.*;
class Book {
   Scanner input = new Scanner(System.in);
   private String name;
   private String author;
   private double price;
   private int pages;
   Book(String name, String author, double price, int pages) {
      this.name = name;
      this.author = author;
      this.price = price;
      this.pages = pages;
   }
   void setName(String name) {
      this.name = name;
   }
   String getName() {
      return name;
   }
   void setAuthor(String author) {
      this.author = author;
   }
   String getAuthor() {
      return author;
   }
   void setPrice(double price) {
      this.price = price;
   }
   double getPrice() {
      return price;
   }
   void setPages(int pages) {
      this.pages = pages;
   }
   int getPages() {
      return pages;
```

```
    }
    public String toString() {
        return ("Book Details: \nName of book : " + name + "\nName of Author: " + author +
"\nPrice of book: " + price + "\nNo. of pages of book: " + pages);
    }
}
class BookTest {
    public static void main(String args[]) {
        System.out.println("Enter the number of books");
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        Book book[] = new Book[n];
        for (int i = 0; i < n; i++) {
            System.out.println("Enter Name: ");
            String na = sc.nextLine();
            System.out.println("Enter Author: ");
            String a = sc.nextLine();
            System.out.println("Enter Price: ");
            double p = sc.nextDouble();
            System.out.println("EnterNo. Of pages: ");
            int num = sc.nextInt();
            book[i] = new Book(na, a, p, num);
            sc.nextLine(); // consume newline character
        }

        for (int i = 0; i < n; i++) {
            System.out.println(book[i].toString());
        }
        System.out.println("Name : Aditi C\tUSN:1BM22CS014");
    }
}
```

Output:

```
C:\Users\BMSCE\Desktop\014>javac Book.java

C:\Users\BMSCE\Desktop\014>java Book
enter the number of books
2
Enter name
The Great Gatsby
Enter Author
F Scott
Enter Price
700
Enter Number of pages
180
Enter name
Pride and Prejudice
Enter Author
Jane Austen
Enter Price
1050
Enter Number of pages
400
THE BOOK LIBRARY
Name of book: The Great Gatsby
Name of author: F Scott
Price of book: 700
number of pages of book: 180
Name of book: Pride and Prejudice
Name of author: Jane Austen
Price of book: 1050
number of pages of book: 400
Name: Aditi C   USN:1BM22CS014
```

WEEK 3:

Program 4: Develop a Java program to create an abstract class named Shape that contains two integers and an empty method named printArea( ). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method printArea( ) that prints the area of the given shape.

Code:

```
import java.util.*;
abstract class Shape
{
        int x,y;
        void printArea()
        {
        }
}
class Rectangle extends Shape
{
        Rectangle(int l,int b)
        {
                x=l;
                y=b;
        }
        void printArea()
        {
                System.out.println("Rectangle Area is" +(x*y));
        }
}
class Triangle extends Shape
{
        Triangle(int l,int h)
        {
                x=l;
                y=h;
        }
        void printArea()
        {
                System.out.println("Triangle Area is" +((x*y)/2.0));
        }
}
class Circle extends Shape
{
        Circle(int r)
        {
```

```
                x=r;
        }
        void printArea()
        {
                System.out.println("Circle Area is" +(3.14*x*x));
        }
}
class ShapeTest
{
        public static void main(String args[])
        {
                Scanner sc=new Scanner(System.in);
                System.out.println("Enter length and breadth);
                int a= sc.nextInt();
                int b= sc.nextInt();
                Shape ob=new Rectangle(a,b);
                ob.printArea();
                Shape ob1=new Triangle(a,b);
                ob1.printArea();
                System.out.println("Enter radius);
                int r=sc.nextInt();
                Shape ob2=new Circle(r);
                ob2.printArea();
                System.out.println("Name: Aditi C\tUSN:1BM22CS014");
        }
}
```

Output:

```
C:\Users\BMSCE\Desktop\014>javac ShapeTest.java

C:\Users\BMSCE\Desktop\014>java ShapeTest
Enter length and breadth of rectangle:
5 7
Rectangle Area is 35
Enter length and height of triangle:
5 7
Triangle Area is 17.5
Enter radius:
3
Circle Area is 28.259999999999998
Name: Aditi C   USN:1BM22CS014
```

WEEK 4

Program 5: Develop a Java program to create a class Bank that maintains two kinds of account for its customers, one called savings account and the other current account. The savings account provides compound interest and withdrawal facilities but no cheque book facility. The current account provides cheque book facility but no interest. Current account holders should also maintain a minimum balance and if the balance falls below this level, a service charge is imposed.
Create a class Account that stores customer name, account number and type of account. From this derive the classes Cur-acct and Sav-acct to make them more specific to their requirements. Include the necessary methods in order to achieve the following tasks:

a) Accept deposit from customer and update the balance.
b) Display the balance.
c) Compute and deposit interest
d) Permit withdrawal and update the balance

Check for the minimum balance, impose penalty if necessary and update the balance.

Code:

```
import java.util.*;
class Account {
   String cust_name;
   int accno;
   double bal;
   Account(String cust_name, int accno, double bal) {
      this.cust_name = cust_name;
      this.accno = accno;
      this.bal = bal;
   }
   void accept(double deposit) {
      bal += deposit;
      System.out.println("Deposit done \nCurrent Balance: " + bal);
   }
   void printBal() {
      System.out.println("Current Balance = Rs " + bal);
   }
}
class CurrAct extends Account {
   double min;
   boolean chequebook;
```

```
    float service_charge;
    CurrAct(String name, int acc, double bal, double min, boolean chq, double c) {
        super(name, acc, bal);
        this.min = min;
        this.chequebook = chq;
        this.service_charge = c;
    }
    void check() {
        if (bal < min) {
            System.out.println("Balance below minimum\nRs " + service_charge + " charge
imposed");
            bal -= service_charge;
            System.out.println("Charge deducted from balance");
        }
    }
    void withdraw(double amt) {
        this.check();
        if (amt < bal) {
            bal -= amt;
            System.out.println("Withdrawal success \nCurrent Balance: " + bal);
        } else {
            System.out.println("Withdraw Unsuccessful");
        }
    }
    void cheque() {
        System.out.println("Cheque book available: " + chequebook);
    }
}
class SaveAct extends Account {
    double interest;
    boolean chequebook;
    int year;
    SaveAct(String name, int acc, double bal, double interest, boolean chq, int year) {
        super(name, acc, bal);
        this.interest = interest;
        this.year = year;
        this.chequebook = chq;
    }
    void deposit(double amt) {
        super.accept(amt);
        super.printBal();
    }
    void withdraw(double amt) {
        if (amt < bal) {
            bal -= amt;
            System.out.println("Withdrawal success \nCurrent Balance: " + bal);
```

```
        } else {
            System.out.println("Withdraw Unsuccessful");
        }
    }
    void CompoundInt() {
        double ci;
        ci = bal * Math.pow((1 + interest / 100), year) - bal;
        bal += ci;
        System.out.println("Compound interest= Rs " + ci + " \nCurrent Balance= Rs " + bal);
    }
    void cheque() {
        System.out.println("Cheque book available: " + chequebook);
    }
}
class Bank {
    public static void main(String args[]) {
        Scanner input = new Scanner(System.in);
        System.out.println("Enter customer details: ");
        System.out.println("Enter name: ");
        String n = input.nextLine();
        System.out.println("Enter account number: ");
        int acc_num = input.nextInt();
        System.out.println("Enter balance: ");
        double b = input.nextDouble();
        Account obj = new Account(n, acc_num, b);
        System.out.println("Enter type of account\n1. Savings\n2. Current");
        int ch = input.nextInt();
        switch (ch) {
            case 1: {
                System.out.println("Calculating compound interest\nEnter interest rate: ");
                double i = input.nextDouble();
                System.out.println("Enter time in terms of years: ");
                int t = input.nextInt();
                SaveAct s = new SaveAct(n, acc_num, b, i, false, t);
                System.out.println("Do you wish to deposit or withdraw?");
                System.out.println("Enter: 1-withdraw\t2-deposit");
                int w = input.nextInt();
                if (w == 1) {
                    System.out.println("Enter deposit amt: ");
                    double damt = input.nextDouble();
                    obj.accept(damt);
                    obj.printBal();
                }
                if (w == 2) {
                    System.out.println("Enter withdraw amt: ");
                    double wamt = input.nextDouble();
```

```
                s.withdraw(wamt);
                s.printBal();
            }
            s.cheque();
            break;
        }
        case 2: {
            System.out.println("Checking for minimum balance ");
            double m = 500.0;
            double s = 50.0;
            CurrAct c = new CurrAct(n, acc_num, b, m, true, s);
            System.out.println("Do you wish to withdraw?(1/0)");
            int w = input.nextInt();
            if (w == 1) {
                System.out.println("Enter withdraw amt: ");
                double damt = input.nextDouble();
                obj.withdraw(damt);
                obj.printBal();
            }
            c.cheque();
            break;
        }
        default:
            System.out.println("Invalid choice");
    }
    System.out.println("Name: Aditi C \tUSN:1BM22CS014");
  }
}
```

Output:

```
C:\Users\BMSCE\Desktop\014>javac Bank.java

C:\Users\BMSCE\Desktop\014>java Bank
Enter customer details
Enter name:
ABC
Enter account number:
123
Enter balance:
20000
Enter type of account
1. Savings
2. Current
1
Calculating compound interest
Enter interest rate:
12
Enter time in terms of years:
2
Compound interest= Rs 5088.000000000004
Current Balance= Rs 25088.000000000004
Do you wish to deposit or withdraw?
Enter: 1-withdraw       2-deposit
1
Enter deposit amt:
200
Deposit done
Current Balance: 20200.0
Current Balance = Rs 20200.0
Cheque book available: false
Name: Aditi C   USN:1BM22CS014
```

```
C:\Users\BMSCE\Desktop\014>javac Bank.java

C:\Users\BMSCE\Desktop\014>java Bank
Enter customer details
Enter name:
ABC
Enter account number:
123
Enter balance:
15000
Enter type of account
1. Savings
2. Current
1
Calculating compound interest
Enter interest rate:
15
Enter time in terms of years:
3
Compound interest= Rs 7813.124999999996
Current Balance= Rs 22813.124999999996
Do you wish to deposit or withdraw?
Enter: 1-withdraw       2-deposit
2
Enter withdraw amt:
500
Withdrawal success
Current Balance: 22313.124999999996
Current Balance = Rs 22313.124999999996
Cheque book available: false
Name: Aditi C   USN:1BM22CS014
```

WEEK 5

Program 6: Create a package CIE which has two classes- Student and Internals. The class Personal has members like usn, name, sem. The class internals has an array that stores the internal marks scored in five courses of the current semester of the student. Create another package SEE which has the class External which is a derived class of Student. This class has an array that stores the SEE marks scored in five courses of the current semester of the student. Import the two packages in a file that declares the final marks of n students in all five courses.

Code:

```
package CIE;
import java.util.*;
public class Student{
	public String name;
	public String usn;
	public int sem;
	public void accept()
	{
		Scanner input=new Scanner(System.in);
		System.out.println("Enter name, usn and  semester: ");
		name= input.nextLine();
		usn= input.nextLine();
		sem= input.nextInt();
	}
}
package CIE;
public class Internals
{
	public int int_marks[]=new int[5];
}

package SEE;
import CIE.Student;
public class External extends Student
{
	public int ext_marks[]=new int[5];
}
import java.util.*;
import CIE.*;
import SEE.*;
public class FinalMarks
{
	public static void main(String args[])
```

```
        {
                int final_marks[]=new int[5];
                Scanner sc=new Scanner(System.in);
                System.out.println("Enter no. of students: ");
                int n=sc.nextInt();
                CIE.Internals obj[]=new CIE.Internals[n];
                SEE.External obj1[]=new SEE.External[n];
                for(int i=0;i<n;i++)
                {
                        obj[i]=new CIE.Internals();
                        obj1[i]=new SEE.External();
                        System.out.println("Enter details of student "+(i+1));
                        obj1[i].accept();
                        for(int j=0;j<5;j++)
                        {
                                System.out.println("Enter Internal & final marks of subject "+(j
                                                                                        +1);
                                obj[i].int_marks[j]=input.nextInt();
                                obj1[i].ext_marks[j]=input.nextInt();
                                final_marks[j]=obj[i].int_marks[j]+ obj1[i].ext_marks[j];
                        }
                        System.out.println("Final marks of "+obj1[i].name);
                        for(int k=0;k<5;k++)
                        {
                                System.out.println("Course "+(k+1)+": "+final_marks[k]);
                        }
                }
                System.out.println("Name:Aditi C \tUSN:1BM22CS014");
        }

}
```

Output:

```
C:\Users\BMSCE\Desktop\014\Package1>javac -d .  Student.java

C:\Users\BMSCE\Desktop\014\Package1>javac -d .  Internals.java

C:\Users\BMSCE\Desktop\014\Package1>javac -d .  External.java
```

```
C:\Users\BMSCE\Desktop\014\Package1>javac FinalMarks.java

C:\Users\BMSCE\Desktop\014\Package1>java FinalMarks
Enter number of students:
2
Enter details of student: 1
Enter USN, name and sem:
123
ABC
3
Enter internal and external marks of subject 1
48
49
Enter internal and external marks of subject 2
48
50
Enter internal and external marks of subject 3
48
48
Enter internal and external marks of subject 4
49
49
Enter internal and external marks of subject 5
50
50
Final marks of ABC
Course 1= 97
Course 2= 98
Course 3= 96
Course 4= 98
Course 5= 100
Enter details of student: 2
Enter USN, name and sem:
124
DEF
3
Enter internal and external marks of subject 1
48
48
Enter internal and external marks of subject 2
49
50
Enter internal and external marks of subject 3
50
50
Enter internal and external marks of subject 4
59
50
Enter internal and external marks of subject 5
48
49
Final marks of DEF
Course 1= 96
Course 2= 99
Course 3= 100
Course 4= 109
Course 5= 97
Name: Aditi. C   USN:1BM22CS014
```

WEEK 6

Program 7: Write a program that demonstrates handling of exceptions in inheritance tree. Create a base class called “Father” and derived class called “Son” which extends the base class. In Father class, implement a constructor which takes the age and throws the exception WrongAge( ) when the input age<0. In Son class, implement a constructor that cases both father and son’s age and throws an exception if son’s age is >=father’s age.

Code:

```
import java.util.*;
class WrongAge extends Exception
{
	String message;
	public WrongAge(String msg)
	{
		this.message=msg;
		System.out.println(msg);
	}
}
class Father
{
	int f_age;
	Father(int f_age) throws WrongAge
	{
		if(f_age<0)
		{
			throw new WrongAge("Age cant be less than 0");
		}
		this.f_age=f_age;
	}
}
class Son extends Father
{
	int s_age;
	Son(int f_age,int s_age) throws WrongAge
	{
		super(f_age);
		if(f_age<=s_age)
		{
		throw new WrongAge("Father can't be younger than son");
		}
		this.s_age=s_age;
	}
```

```
}
class AgeTest
{
	public static void main(String args[])
	{
		int f,s;
		Scanner input=new Scanner(System.in);
		System.out.println("Enter age of father and son\n");
		f=input.nextInt();
		s=input.nextInt();
		try{
			Father ob1=new Father(f);
			Son ob2=new Son(f,s);
		}
		catch(WrongAge e)
		{
			System.out.println("Caught");
		}
	System.out.println("Name:Aditi C \tUSN:1BM22CS014");
	}
}
```

Output:

```
Enter ages of father and son:
50
18
Name: Aditi C
USN: 1BM22CS014

C:\Users\BMSCE\Desktop\014>javac Demo.java

C:\Users\BMSCE\Desktop\014>java Demo
Enter ages of father and son:
18
50
Father age cannot be less than Son's age
Exception
Name: Aditi C
USN: 1BM22CS014

C:\Users\BMSCE\Desktop\014>javac Demo.java

C:\Users\BMSCE\Desktop\014>java Demo
Enter ages of father and son:
-12
20
Age can't be negative
Exception
Name: Aditi C
USN: 1BM22CS014
```

WEEK 6

Program 8: Write a program which creates two threads, one thread displaying "BMS College of Engineering" once every ten seconds and another displaying "CSE" once every two seconds.

Code:

```
import java.util.*;
class NewThread implements Runnable {
   String name;
   Thread t;
   NewThread(String name) {
      this.name = name;
      t = new Thread(this, name);
      t.start();
   }
   void run() {
      for (int i = 0; i < 5; i++) {
         if (name.equals("one")) {
            System.out.println("BMS Ccollege of Engineering");
            try {
               Thread.sleep(10000);
            } catch (InterruptedException e) {
               System.out.println("Interrupted");
            }
         } else if (name.equals("two")) {
            System.out.println("CSE");
            try {
               Thread.sleep(1000);
            } catch (InterruptedException e) {
               System.out.println("Interrupted");
            }
         }
      }
   }
}
class Demo {
   public static void main(String args[]) {
      NewThread obj1 = new NewThread("one");
      NewThread obj2 = new NewThread("two");
      try {
         obj1.t.join();
         obj2.t.join();
      } catch (InterruptedException e) {
         System.out.println("Main thread interrupted");
```

```
    }
  }
}
```

Output:

```
C:\Users\BMSCE\Desktop\014>javac Test.java

C:\Users\BMSCE\Desktop\014>java Test
BMS Ccollege of engineering
CSE
CSE
CSE
CSE
CSE
BMS Ccollege of engineering
BMS Ccollege of engineering
BMS Ccollege of engineering
BMS Ccollege of engineering
Name: Aditi C
USN: 1BM22CS014
```

WEEK 7

Program 9: Write a program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a NumberFormatException. If Num2 were Zero, the program would throw an Arithmetic Exception Display the exception in a message dialog box.

Code:

```
import javax.swing.*;
import java.awt.*;
import java.awt.event.*;
class SwingDemo
{
   SwingDemo()
   {
      JFrame jfrm= new JFrame("Divider app");
      jfrm.setSize(265,150);
      jfrm.setLayout(new FlowLayout());
      jfrm.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
      JLabel jlab=new JLabel("Enter the divider and divident: ");
      JTextField ajtf=new JTextField(8);
      JTextField bjtf=new JTextField(8);

      JButton button = new JButton("Calculate");

      JLabel err=new JLabel();
      JLabel alab=new JLabel();
      JLabel blab= new JLabel();
      JLabel anslab=new JLabel();

      //add in order
      jfrm.add(err);//to display error
      jfrm.add(jlab);
      jfrm.add(ajtf);
      jfrm.add(bjtf);
      jfrm.add(button);
      jfrm.add(alab);
      jfrm.add(blab);
```

```
jfrm.add(anslab);

ActionListener I =new ActionListener()
{
   public void actionPerformed(ActionEvent evt)
   {
      System.out.println("Action event from a text field");
   }
};
ajtf.addActionListener(I);
bjtf.addActionListener(I);

button.addActionListener(new ActionListener()
{
   public void actionPerformed(ActionEvent evt)
   {
      if (err.getText()!=null)
         err.setText("");
   try
   {
      int a =Integer.parseInt(ajtf.getText());
      int b =Integer.parseInt(bjtf.getText());
      int ans= a/b;

      alab.setText("\nA= "+a);
      blab.setText("\nB= "+b);
      anslab.setText("\nAns= "+ans+"     Aditi C [1BM22CS014]");
   }
   catch(NumberFormatException e)
   {
      alab.setText("");
      blab.setText("");
      anslab.setText("Aditi C [1BM22CS014]");
      err.setText("Enter only Integers!");
   }
   catch(ArithmeticException e)
   {
      alab.setText("");
      blab.setText("");
      anslab.setText("Aditi C [1BM22CS014]");
```

```
                err.setText("B should be NON zero!");
            }
        }
        });

        //display frame
        jfrm.setVisible(true);
    }

    public static void main(String args[])
    {
        //create frame on event dispatching thread
        SwingUtilities.invokeLater(new Runnable()
        {
            public void run()
            {
                new SwingDemo();
            }
        });
    }
}
```

Output: